DOCUMENT RESUME

ED 210 941 FL 012 730

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TITLE Children's Acquisition of Color Vocabulary.
PUB DATE 15 Jul 81
NOTE 10p.; Paper presented at the Annual Meeting of the Linguistic Society of America (56th, New York, NY, December 27-30, 1981).

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Child Language; Children; *Color; Dimensional Preference; Elementary Education; Females; Language Research; Males; *Sex Differences; *Visual Perception; *Vocabulary Development

ABSTRACT

The study reported here examined the use of color terms by 36 male and female students in kindergarten through fifth grade in a suburban New York City school. The children were asked to label colors using the fanciest color term they could. The only significant difference found was between younger females and older females, tentatively indicating a developmental trend that may explain the difference in color term production between adult females and adult males. Previous studies had found that adult females use fancier terms to describe colors than do adult males and suggested that this difference is determined early in life. The present study indicates that while the difference in color usage between the sexes was not statistically significant at the age levels tested, it may point to a significant difference in later development.
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Children's Acquisition of Color Vocabulary

by

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July 15, 1981

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Although there are seven and one half million different shades of color (Optical Society of America, Committe on Colorimetry, 1953), and four thousand words in English to describe them (Malez and Paul, 1930), few people make that many color distinctions. In fact, wrote Brown (1958), "In American English there are only about eight commonly used color terms. Evidently we categorize colors." (p. 211). The eight he named were red, orange, yellow, green, blue, purple, pink, and brown. Berlin and Kay (1969) surveyed languages other than English and concluded that the colors black, white, and grey should be added to this list.

The number of categories used is in dispute, however. Lakoff (1975) felt women have more categories, and a larger color vocabulary, than do men. She wrote that women make far more precise discriminations than do men when they name colors. She felt that words like beige, ecru, aquamarine, and lavender were unremarkable in a woman's active vocabulary but were absent from that of most men.

Lakoff's contentions were based on introspection and observation rather than empirical data collection. However, some support for her hypotheses is offered by several authors. Wordsworth and Wells (1911) found that college women name colors faster than do college men. Ligon (1932) discovered that elementary school girls are faster at the same task than are their male classmates. Perhaps colors are more familiar to females than to males, and women can thus recognize them more quickly.

An investigation of actual use of color terms was conducted by Rich (1977). She presented colors to groups of men and women. Some of her subjects were nuns in traditional religious orders who still wore the habit. Her results indicated that women use fancier color terms than men, that younger men use fancier color words than older men, and that the nuns used fewer fancy words than the other women but still more fancy words than did the men. Rich felt that these results suggested that cultural factors are significant in color

naming. She stated: "Both the fact that the nuns do score higher than the men and that women score higher than men, even if their current principal occupation is the same, suggest that this difference is determined quite early in life before adult occupations are chosen." (p. 408).

Color is considered an attribute, and children begin to use attributes as early as sixteen to twenty-one months (Bloom, 1973). Trantham and Federsen (1975) found that all eight of the female and male children whose language they studied were using color words by thirty-five months. Thus, it is possible that even young children will show a sex difference in color naming.

The purpose of this study was to investigate the use of color terms by elementary school children to see if this use is, in fact, determined in childhood as Rich suggested. It was hypothesized that a significant difference between the male and female children would exist. An analysis of the difference adds to our knowledge both of when color terms are acquired and whether the variable of sex affects that acquisition.

METHOD

Subjects

The subjects were three female and three male students from each grade (kindergarten through five) in a suburban New York City school. All children in the six classes were given cover letters explaining the study and permission slips for participation in the study to be completed by their parents. Children reported by teachers to have any known handicapping condition (i.e., enrollment in remedial reading, behavior problems, etc.) were eliminated from the study. Random selection of subjects was made from among the remaining children.

Procedures

Following Rich's (1977) procedures, a set of twenty-five index cards was

made by coloring a two inch square in the center of a three inch by five inch card. The colors came from Crayola's box sixty-four crayons. The colors were distinct from one another, and each color was used only once.

Because the subjects in this investigation were children, two additional cards were made and used in a training procedure. This was done to ensure that the children understood what was expected of them. The investigator showed each child a training card and asked "What color is this?" When the child responded, the examiner replied "That's right. It's green. But we could use fancier words. We could call it light green. Say 'light green.' We could call it sea green. Say 'sea green.' Or we could call it mint. Say 'mint.'" This training was repeated with the second card. Immediately following the training, when the twenty-five test cards were presented, each child was told "Tell me what color this is. Use the fanciest word you can."

Cards were presented in random order to different subjects. All responses were taped and rated according to the following system, similar to Rich's (1977):

1. basic: one of the eleven terms suggested by Berlin and Kay (1969), (red, orange, yellow, green, blue, purple, pink, black, white, or grey)
2. qualified basic: one of the above eleven terms qualified with "light," "dark," or another basic term (i.e., reddish-orange). Rich (1977) wrote "Responses in this category are more specific than basic responses but they do not actually show a larger vocabulary." (p. 405)
3. qualified fancy: a basic word coupled with a unique qualifier (i.e., forest green)
4. fancy: a color term not in the basic category (i.e., mauve, beige)

Each subject received one point for a basic term, two points for a qualified basic term, three points for a qualified fancy term, and four points for a fancy term. If a child gave two or more answers, s/he was credited with points for the fanciest one.

It should be noted that Rich used the term "basic" with two additional colors, tan and violet. It is felt, however, that tan is a variant of brown, and violet is a variant of purple, and so both terms were judged to be in the "fancy" category when they were represented in the childrens' answers. Support for this decision can be derived from both Brown (1958) and Berlin and Kay (1969).

RESULTS

A second judge was trained in the scoring method. She rated 10% of the childrens' responses, and 99% interjudge agreement was obtained. The mean scores and standard deviations for each group (younger males, younger females, older males, older females) are reported in Table 1.

An Analysis of Variance with Repeated Measures (ANOVR) (Games, Gray, Herron, Pentz, Sinatra, and Pitz, 1979) was applied to the results. A significant interaction of the two factors of age and sex ($F = .065$) was obtained, so the simple means were compared using a t test for independent measures. No significant differences were found between younger (grades kindergarten, first, and second) males and younger females, between older (grades third, fourth, and fifth) males and older females, or between younger males and older males. The only significant difference was between younger females and older females (see Table 2). The older females used significantly more fancy terms than did the younger females to describe colors.

DISCUSSION

Previous findings have suggested that adult females used fancier terms to describe colors than do adult males and that this difference is determined early in life (Rich, 1977).

Results achieved in this study, however, indicate that there is little difference between boys' and girls' use of color terms in grades kindergarten through five. When asked to name colors, boys and girls did not show significant differences.

When younger boys were compared to older boys, again there was no significant difference in their scores. However, older girls used significantly more fancy color terms than did younger girls. This may indicate a developmental trend in females. It is possible that they are learning fancier terms than the males are as they grow older. While this difference between the sexes was not statistically significant at the age levels tested, it may point to a significant difference in later development. Thus males' use of color terms may stabilize early, while females' color vocabularies continue to grow. This would help explain why the difference at the adult level is not reflected in children in grades kindergarten through five. Further testing is needed in the junior high and high schools (grades six through twelve) to see if this trend towards increased females' color vocabularies continues to grow.

TABLE 1. RESULTS OF COLOR VOCABULARY TESTS

Group	Mean	Standard Deviations
Younger Males	33.8889	10.3253
Younger Females	40.1111	7.8493
Older Males	46.1111	8.9784
Older Females	50.8889	6.2539

TABLE 2. RESULTS OF t TESTS OF INDEPENDENT MEANS

Groups Compared	Difference	Obtained t Value[1]
Younger Males and Younger Females	- 6.2222	-1.4392
Older Males and Older Females	- 4.7778	-1.3100
Younger Males and Older Males	-12.2222	-2.6797
Younger Females and Older Females	-10.7778	-3.2217*

[1]Critical values of t at .01 level of significance, df = 16, is 2.92. Significant results are marked with an asterisk *.

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